

# **THE HELICOPTER INNOVATION IN UNITED STATES ARMY AVIATION**

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From the mountains of Korea, to the jungles of Vietnam, from the central front in Europe, to the deserts of Iraq the helicopter has supplied the Army with the mobility necessary to the modern battlefield. The helicopter in the United States Army has seen a long history of development but has proven itself time and again by developing new solutions to changing strategic, operational, and tactical situations with a number of innovations. The development of helicopter aviation is a prime test for theories of military innovation because its history includes such often cited factors as the presence of strategic threat, interservice rivalry, and civilian intervention. The use of the helicopter in Army Aviation may also be seen as a series of innovations that has allowed the helicopter to retain an important place in Army doctrine. The focus of this paper is to determine what factors formed the helicopter innovation at times vital to its development. Was the presence of new threats to national security, the intervention of civilian authorities, or competition with other combat branches the most vital element to the helicopter innovation?

In the current literature there are three competing theories for the explanation of military innovation. The first of these centers on the presence of a strategic threat and states that innovation will occur in military organizations when members of that organization perceive the need for change in military doctrine due to the threat of military defeat.<sup>1</sup> The second theory states that while a strategic threat may exist its presence alone is not enough to implement innovation. Innovation will only occur in military organizations when forced by civilian intervention.<sup>2</sup> The third theory of military innovation deals with rivalries between different branches of the military. It states that

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<sup>1</sup> Rosen, Stephen P. *Winning the Next War*. (Cornell University Press: Ithaca, NY, 1991) Pg. 57

<sup>2</sup> Posen, Barry R. *The Sources of Military Doctrine*. (Cornell University Press: Ithaca, NY, 1984) Pg. 58

innovation occurs when ambiguities over roles and missions arise that offer the opportunity to expand the assets that an organization considers vital to its functions.<sup>3</sup>

To test these hypotheses for the helicopter innovation in the Army, a number of historical cases over a wide range of time will be used. The first case will be that of the development of the airmobility innovation. The initial stage of this innovation occurred in the use of helicopters on a tactical level in the Korean War. The expansion and implementation of the doctrine of airmobility occurred in the 1950's and early 1960's, and was heavily influenced by civilian and Air Force leaders. The impact of the Vietnam War on the airmobility doctrine will then be presented. The Vietnam War served to build the role of the helicopter in warfare, but also caused the need for new innovations in the aviation community. This leads directly to the second case in helicopter innovation, the development of the anti-tank helicopter. With the buildup of Soviet forces in Europe, the Army was forced to innovate again. In the 1970's and 1980's Army advocates of the helicopter stressed its strengths as a weapons platform to overcome Soviet forces on the Central Front. The new focus of the Army towards this threat was shaped by events in the Middle East and Europe, as well as by civilian leaders.

The cases presented provide much support for the theory of civilian intervention. In each case civilian intervention was necessary to stimulate the process of innovation, or bring it to its conclusion. Even when Army leaders were presented with a clear and credible threat to the United States and Army doctrine, they were never able to fully develop innovative doctrine in the absence of civilian intervention. This provides clear proof against the theory of strategic threat. Although changes in the international

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<sup>3</sup> Ibid. Pg. 57 and Bergerson, Frederic A. *The Army Gets an Air Force*. (Johns Hopkins University Press: Baltimore, MD, 1980) Pg. 15-9

environment were one factor towards innovation, they do not represent the sole factor. There is mixed evidence for the support of interservice rivalry in the cases of helicopter innovation. While rivalry with the Air Force over the missions of troop transport and close air support (CAS) was an important factor in the development of airmobility, it was of decreased importance in successive innovations. After the Army-Air Force agreement in 1966 the Army was left to develop helicopters as it saw fit with little interference from the Air Force. Although not the sole factor influencing the helicopter innovations, civilian intervention emerges as the most important.

### **The Airmobility Innovation**

#### **The Korean War and Early Use of the Helicopter**

The first tactical developments in rotary wing flight took place during the Korean conflict. The Korean War offered many obstacles to the field commander. Infrastructure in country was extremely poor hampering mobility in the extreme. The mountainous ranges and boggy valleys of the theater hindered Army operations that relied on heavy armor and straight leg infantry for the movement of forces. Although large-scale helicopter operations did not occur in Korea, a number of commanders used helicopters to improve their positions. Officers first used helicopters for light observation and transportation. They soon proved useful, if limited, in other ways as well. Early in the conflict observation pilots began to run supplies to forward elements that had been cut off from their supply lines, and to evacuate wounded from these same units.<sup>4</sup> Although the loads they carried were necessarily very limited, troops came to deeply appreciate the “little birds”. Thousands of wounded front line troops were evacuated by helicopters to

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<sup>4</sup> Raines, Edgar F. Jr., "The Army and Organic Tactical Air Transport, 1952-1965" (U.S. Army Center of Military History, Unpublished manuscript, 4 November 1997), Pg. 9

rear MASH units in mere hours rather than the days it would have taken by ground transport.<sup>5</sup> Helicopters also offered a vertical landing capability that allowed it to operate in a manner that the existing inventory of light fixed wing aircraft could not, thereby making it a far more versatile option.

In addition to the use of helicopters as material transport there was some development of troop transport. The Marine Corps had some experience with troop transport by helicopter prior to the Korean War. They had tested the use of helicopters for amphibious landings and developed a doctrine for their use known as vertical envelopment.<sup>6</sup> On September 21, 1951 the Marine Corps carried out Operation Summit, which landed 224 Marines on two separate sites along the front. This operation would have taken nine hours by road while under direct fire from enemy mortars, but was accomplished in eight minutes using helicopters. The Army observed the success of this deployment and, by the Armistice, had carried out a number of small-scale helicopter deployments on its own.<sup>7</sup> The helicopter had proven itself a versatile tool on the tactical level, improving units speed, mobility, and supply in an exponential manner.

The use of helicopters was highly lauded by theater commanders in Korea for a number of reasons. Helicopters added flexibility to a force that allowed it to respond to unforeseen circumstances rapidly. They could carry out many light tasks, such as observation, resupply, and the laying of ground wire for communications quickly and with a minimum of preparation. Helicopters could operate from “normal Army depot and troop areas without elaborate special facilities” allowing commanders quick access to

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<sup>5</sup> Tierney, Richard. *The Army Aviation Story*. (Colonial Press, Newport, Alabama, 1963) Pg. 203, 207-10

<sup>6</sup> Dunstan, Simon. *Vietnam Choppers: Helicopters in Battle 1950-1975*. (Osprey Publishing Ltd, London, England, 1988) Pg. 9

aircraft close to the front lines. Even more importantly these forces were at the direct command of the Army officers, eliminating the need to go through elaborate chains of command.<sup>8</sup>

During and after the Korean conflict the deployment of helicopters to Army units increased. Although advocates for expanding the role of helicopters in Army units existed before the Korean War, the ideas had been set aside by Army command due to opposition from the Air Force.<sup>9</sup> Once helicopters had proven themselves in Korea new steps were taken to supply units with rotary wing assets. Beginning in 1950 the number and types of helicopters considered for use by the Army increased.<sup>10</sup> The Army programmed the creation of twelve battalions of medium and heavy cargo helicopters for deployment over five years. Budget restrictions and intransigence from the Air Force dampened these enthusiastic ideas and far fewer helicopters were bought and deployed than originally planned.<sup>11</sup>

The helicopter was a new and largely untried technology at the time of the Korean War and had capabilities not fully utilized in existing Army doctrine. By using the helicopter to overcome the restrictions of movement inherent in the Korean theater, operations were conducted that would have been difficult, if not impossible, using traditional military means. This does not, however, constitute a full-scale innovation. To bring the helicopter to its full potential new doctrine for the use of the aircraft would have to be conceived. When the operations in Korea met with success, officers within the

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<sup>7</sup> Raines, Edgar F. Jr., "The Army and Organic Tactical Air Transport, 1952-1965." (U.S. Army Center of Military History, Unpublished manuscript, 4 November 1997) Pg. 16

<sup>8</sup> Ibid. Pg. 12

<sup>9</sup> Ibid. Pg. 11

<sup>10</sup> Ibid. Pg. 12

<sup>11</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 4

Army began to look at higher-level operational and strategic problems with new solutions in mind. This was particularly true of large-scale military operations on the nuclear battlefield. The Army had to face this possibility due to the adoption of a massive retaliation strategy by the Eisenhower administration, and the introduction of strategic and tactical nuclear weapons to the conventional battlefield.<sup>12</sup> Korea had proven the utility of the helicopter for tactical use, and now many believed it could be used to counter strategic problems as well.

#### Development of the Airmobility Innovation

After the Korean War a new wave of Army thinking about how to fight a war with the Soviet Union in Europe in the nuclear era triggered innovative thinking on the use of rotary winged aircraft. By 1953 the problems of the nuclear battlefield had been much considered and the Army was presenting solutions. Destructive effects of nuclear weapons required the Army to disperse its forces into units small enough to avoid a nuclear strike. The Army needed to be able to concentrate rapidly, destroy the enemy, and disperse again before the enemy could reply with a nuclear attack. As Undersecretary of the Army Alexander put it in 1951:

Advances in mass killing power have made battlefield dispersion an indispensable part of tactics and techniques.<sup>13</sup>

This concept rested heavily on the 1st Cavalry Division's success on the Naktong River in 1950. In this engagement the commander kept most of the division's assets concentrated in the rear of the force and moved in response to North Korean incursions

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<sup>12</sup> Rosen, Stephen P. *Winning the Next War*. (Cornell University Press: Ithaca, NY, 1991) Pg. 72-3

<sup>13</sup> Butler, Howard K. *The Restoration of the Army Air Corps: 1947-1953*. (United States Army Aviation and Troop Command, Saint Louis, Missouri, 1995) Pg. 147

detected by forward elements.<sup>14</sup> The Army proposed to use this model of deployment on a grand scale covering a battle zone 150-200 miles in depth. To operate in these conditions the Army restructured towards a new Pentomic division, composed of five battle groups of five rifle companies plus one support company to replace the three regiments of the triangular division.

The dispersion on the nuclear battlefield embodied in the Pentomic system increased the Army commander's need for mobility within his forces. The Pentomic model demanded early detection of enemy forces and the ability to move friendly forces quickly in response. To achieve this mobility helicopter-borne infantry units, dubbed "sky cavalry" were proposed. These units would conduct the traditional roles of the horse cavalry to find, fix, and fight the enemy until reserves could assemble to destroy them.<sup>15</sup>

To utilize fully the possibilities of this new form of war fighting the Army stated that the helicopters in the units must be organic to them rather than assembled in Air Force "troop carrier squadrons." They...

...must be under a responsible unit commander and organic to his unit. It is my (Undersecretary for the Army Archibald Alexander) firm belief that the integration of cargo aircraft into tactical operations is mandatory and that a full time requirement for such aircraft exists.<sup>16</sup>

These units would deliver artillery and ammunition to inaccessible locations, allow the negotiation of river crossings and other terrain obstacles, and render the units virtually independent of conventional lines of communication.<sup>17</sup>

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<sup>14</sup> Raines, Edgar F. Jr., "The Army and Organic Tactical Air Transport, 1952-1965." (U.S. Army Center of Military History, Unpublished manuscript, 4 November 1997) Pg. 27-9

<sup>15</sup> Stockfisch, J. A. "The 1962 Howze Board and Army Combat Developments." (RAND, Santa Monica, CA, 1994) Pg. 11

<sup>16</sup> Butler, Howard K. *The Restoration of the Army Air Corps: 1947-1953*. (United States Army Aviation and Troop Command, Saint Louis, Missouri, 1995) Pg. 146-7

<sup>17</sup> Ibid. Pg. 896

One of the biggest proponents of the sky cavalry proposition was Major General James M. Gavin. His article “Cavalry, and I Don’t Mean Horses,” published in Harper’s magazine in 1954, was part of an effort by Army officers to raise support for helicopter aviation. The article argued that only through the use of helicopters in a traditional cavalry role of screening, reconnaissance, exploitation, and pursuit would the Army be able to make the Pentomic division effective.<sup>18</sup> The further development and deployment of helicopter aviation would thereby serve not just the interests of the few airmobile-minded officers, but the Army as a whole.

Doctrinal ferment within the Army about the development of helicopter aviation soon translated itself into changes within the Army’s training and operational structure. Convinced of the utility of Army aviation for the future, the Army established Fort Rucker, Alabama as an institution for training of Army pilots and testing of aviation concepts. An Aviation Test Board was created there to facilitate the spread and development of ideas as well as concentrate materials for testing.<sup>19</sup> The move to Fort Rucker also coincided with the decision to split rotary wing training from fixed wing training; a move that further emphasized the helicopter’s growing importance.<sup>20</sup>

Following these events, written doctrine about the use of helicopters in combat soon emerged. Through the Command and General Staff College and the Infantry School, doctrinal works on the use of “airmobility” and “airmobile operations” were published in the mid-50’s. Field Manual 57-35 on Army Transport Aviation Combat Operations and

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<sup>18</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 6-7 and Raines, Edgar F. Jr., "The Army and Organic Tactical Air Transport, 1952-1965." (U.S. Army Center of Military History, Unpublished manuscript, 4 November 1997) Pg. 25-6

<sup>19</sup> Stockfisch, J. A. “The 1962 Howze Board and Army Combat Developments.” (RAND, Santa Monica, CA, 1994) Pg. 8

<sup>20</sup> Tierney, Richard. *The Army Aviation Story*. (Colonial Press, Newport, Alabama, 1963) Pg. 96-7

an aviation-airmobile section in Field Manual 100-5 went a long way in changing the rough concepts advocated by Gen. Gavin and others into viable tactical operations.<sup>21</sup>

Perhaps more importantly the Department of Army Staff decided that the new importance of Army aviation warranted representation on the Army Staff. A new division was created, the Aviation Staff Division, which was to be an integral part of the Department of Army Staff. To head the division General Hamilton H. Howze was chosen, an officer who would prove to be key in the development of Army aviation.<sup>22</sup>

By concentrating on the strategic level problems of the nuclear battlefield, aviation had gained standing within the Army. Aviation advocates in conjunction with Army leaders created doctrine, trained troops, and developed tactics that would be vital to fighting the next war. By forming this bureaucratic base it was then able to push the innovation of the helicopter forward.

#### Development of the Armed Helicopter for Airmobility

In 1955 Operation Sagebrush tested the concept of the air cavalry and found that while it increased exponentially the ability of units to find and fight the enemy on the nuclear battlefield a number of problems remained. One of these was fire support for the airmobile units.<sup>23</sup> To provide needed support for its troops outside the range of artillery many in the Army proposed using armed helicopters and slow moving fixed wing aircraft internal to Army organization to provide CAS. To provide this support the Army aviation community again mobilized.

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<sup>21</sup> Raines, Edgar F. Jr., "The Army and Organic Tactical Air Transport, 1952-1965." (U.S. Army Center of Military History, Unpublished manuscript, 4 November 1997) Pg. 35

<sup>22</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 91-2

<sup>23</sup> Stephenson, Roy Richard. "Road to Downfall; Lam Son 71/9 and U.S. Airmobility Doctrine." (Ph.D. dissertation, University of Kansas, 1991) Pg. 12-13.

After the review of Operation Sagebrush, Army aviation centers began experimenting with the helicopter as an armed platform. Brigadier General Carl I. Hutton, Commandant of the Army Aviation School at Fort Rucker, served as supporter and initiator of these experiments.<sup>24</sup> In June of 1956, by liberally interpreting Continental Army Command training directives,<sup>25</sup> Gen. Hutton directed a non-rated officer by the name of Colonel Jay T. Vanderpool to develop feasible weapons systems for the helicopter and an organizational structure to deploy them.

The energetic Colonel Vanderpool began experimenting with a Bell H-13 helicopter, the smallest helicopter available in the Army inventory.<sup>26</sup> With a shoestring budget and schematics drawn on a paper napkin, Col. Vanderpool began scouring the military bases and industrial centers of the nation in search of ideas. He and a group of like-minded aviators and civilians, known as “Vanderpool’s Fools,” soon began welding machine guns and launching rails for rockets to their little helicopters.<sup>27</sup> Once these systems had proven feasible Vanderpool developed doctrine and company sized organizations to go with them.<sup>28</sup> By 1957 Col. Vanderpool and his “Fools” were flying around the country and providing demonstrations of how the armed helicopters, or “sky cavalry,” could increase the organic firepower and effectiveness of the Pentomic division.<sup>29</sup> The ideas inherent in Vanderpool’s work grew within the aviation community

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<sup>24</sup> Tolson, Lt. Gen. John J. *Airmobility 1961-1971*. (Department of the Army, Washington, DC, 1973) Pg. 6

<sup>25</sup> <http://www.aircav.com/histavn.html>

<sup>26</sup> Stockfisch, J. A. “The 1962 Howze Board and Army Combat Developments.” (RAND, Santa Monica, CA, 1994) Pg. 9-10

<sup>27</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg.94-7

<sup>28</sup> Stockfisch, J. A. “The 1962 Howze Board and Army Combat Developments.” (RAND, Santa Monica, CA, 1994) Pg. 10

<sup>29</sup> *Ibid.* Pg. 10

and its feasibility and necessity was verified through the work of the Rogers Board in 1960 and the Howze Board in 1962, which will be discussed in greater detail later.<sup>30</sup>

These events seem to confirm the hypothesis of two of the theories listed above. The first is the strategic threat hypothesis. The Army concentrated on solving the strategic level threat of nuclear warfare and brought the helicopter from a useful tool on the battlefield, to the way the Pentomic divisions would combat enemy forces. The airmobile innovation was developed and accepted at a time when the Army faced a crisis in budgets and feared for its continued utility under the doctrine of massive retaliation. By fitting the innovation into existing Army doctrine on the Pentomic division, and enhancing rather than replacing existing systems, helicopters fit easily within Army thought. By presenting a solution that would enhance the capabilities of the Army as a whole rather than aviators or airborne troops as a community, innovation was fostered and accepted.

The doctrine was also developed as a means to control the missions of troop mobility and lift, lending credence to the theory of interservice rivalry. The Army argued repeatedly that helicopter units had to be organic to the units in order to allow quick response on the battlefield. Arguments also arose with the Air Force over the use of the armed helicopter and would continue into the period of the helicopter's implementation into the Army force structure. Arguments with the Air Force over roles and missions existed at this point in the development of the helicopter, but it was the strategic problems of nuclear war that first provided the impetus for innovation.

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<sup>30</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 7-8

### Implementation of the Airmobility Innovation: the Effects of Interservice Rivalry

While large-scale strategic threats were a primary factor in developing the idea of airmobility, other factors drove events in the period of implementation. The tension between the Army and the Air Force was one such factor. The place of aviation in American military strategy was a much-debated topic between the Army and the Air Force. The Air Force believed that all roles and missions involving aircraft should be under the central control of its organization. With the implementation of the massive retaliation strategy under the Eisenhower administration, the Air Force received the means and civilian support to dominate these roles.

Air Force thinking on the centralization of aircraft under an Air Force commander conflicted with Army thinking that aviation assets for intra-theater lift and troop support should be controlled by ground commanders. This conception was further strengthened by events in Korea and the perception that the Air Force had “flown away” from the Army.<sup>31</sup> During the nuclear era and the reduction of defense spending, the Air Force focused on its role in the strategic nuclear aspect of American grand strategy and increasingly neglected the mission of CAS and intra-theater transport. Rather than investing its funds in attack aircraft or lift capabilities, the Air Force spent money and time developing long-range bombers and more advanced nuclear weapons.<sup>32</sup>

Desperate to provide the mobility and firepower the Army considered necessary to operate in the new environment of nuclear warfare, many in the Army advocated organic Army aviation to provide for troop mobility and fire support. The helicopter innovation took place in the Army not only to adapt to strategic change, but also as a

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<sup>31</sup> Howze, Hamilton H. *A Cavalryman's Story*. (Smithsonian Institution Press, Washington, DC, 1996)

means to exploit the overlap in roles and missions, and provide and control aviation capabilities necessary for Army missions.

The Air Force was not willing to relinquish its role in areas of intra-theater transport and CAS, despite its lack of attention to the area. The battles with the Army over intra-theater troop transport further complicated developments in doctrine on transport within the Air Force itself. Throughout the history of the Air Force the troop transport branch had been seeking missions to justify its existence. With the advent of nuclear weapons the branch had been consistently neglected in the budget. It faced the threat of consolidation with other branches, and competition with civilian carriers for peacetime missions. If the Army were to develop its own troop carrying capability it could doom the troop transport community within the Air Force.<sup>33</sup> This intraservice dispute spilled over into discussions about Army transport and provided incentives on both sides for the control of troop mobility.

The Air Force had watched developments in the Army very closely and raised numerous objections throughout the periods of innovation. Since the establishment of the Air Force as a separate service in 1947, limitations had been imposed on the use of aircraft organic to the Army and the types and specifications of aircraft used. The first of these limitations came about in 1948 after the negotiation of the Key West Agreement, which delineated the roles of the military services. According to this document the Air Force was to supply the Army with all “aviation needed for the effective prosecution of war.” While the Army was to provide all land-based forces needed for the same while

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<sup>32</sup> Bergerson, Frederic A. *The Army Gets an Air Force*. (Johns Hopkins University Press: Baltimore, MD, 1980) Pg. 37-8

<sup>33</sup> Miller, Charles E. *Airlift Doctrine*. (Air University Press, Maxwell Air Force Base, AL, 1988) Pg. 164-5, 421

having only “such aviation... as may be organic therein,” thereby attempting to limit the Army to the low performance aircraft it already maintained. The Army would be dependant on the Air Force for its combat needs and was prohibited from developing them itself.<sup>34</sup>

There was some room for interpretation in the document that Army aviators would soon exploit. Especially since the Army’s role was further delineated as:

Expediting and facilitating the conduct of operations on land; improving mobility, command, control, and logistics support of Army forces; and facilitating greater battlefield dispersion and maneuverability under conditions of atomic warfare.<sup>35</sup>

For Army aviation advocates the demand for improved mobility could be fulfilled by the use of aircraft. This statement, combined with the section concerning organic aviation served to provide enough overlap in roles and missions to justify the development of airmobility.

The first obstacle the Army had to overcome in developing the airmobile idea was the 4000 pound weight limit imposed on rotary winged aircraft by the Joint Army Air Force Regulation 5-10-1 of May 20, 1949. This weight limit denied the development of the medium and heavy lift helicopters that the Army felt was vital to its new airmobility doctrine.<sup>36</sup> With the Korean War intensifying and large numbers of requests for helicopters beyond the weight limit flooding the Army command, the two services were forced to work out a compromise. On October 2, 1951 the services signed a Memorandum of Understanding (MOU) that removed the weight restrictions allowing the

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<sup>34</sup> Butterworth, W. E. *Flying Army*. (Doubleday and Co., Garden City, NY, 1971) Pg. 66

<sup>35</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 75-6

<sup>36</sup> Stephenson, Roy Richard. *Road to Downfall: Lam Son and U.S. Airmobility Doctrine*. (Ph.D. dissertation, University of Kansas, 1991) Pg. 6-7

procurement of medium to heavy lift cargo helicopters.<sup>37</sup> However, the MOU also placed restrictions on Army helicopters role in combat and area of operations. The Air Force would provide all other functions for Army supply, transport, and assault in areas outside a set zone.<sup>38</sup> As a further block on the Army's plans, procurement and testing for helicopters still remained with the Air Force.<sup>39</sup>

The acquisition of aircraft for the Army in this period was controlled by the Air Force, as was the training of pilots.<sup>40</sup> This caused severe problems within the Army for equipping its forces. Cargo helicopters had been considered in the Army prior to Korea but their acquisition was shelved by the Air Force. The Army attempted repeatedly to acquire the machines needed to make its new airmobility concepts work, and was repeatedly rebuffed. Gen. Gavin recalls one such request being answered by the Air Force director of requirements as follows:

I am the Director of requirements and I will determine what is needed and what is not. The helicopter is aerodynamically unsound. It is like lifting oneself by one's bootstraps. It is no good as an air vehicle and I am not going to procure any. No matter what the Army says, I know what it needs and what it does not need.<sup>41</sup>

These comments from the director and others like them convinced Army officials they would have to move soon to remedy the situation.

The Army realized that to apply the helicopter innovation to the Pentomic division it would have to alter current agreements. Army officials desired an increase in

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<sup>37</sup> Butler, Howard K. *The Restoration of the Army Air Corps: 1947-1953*. (United States Army Aviation and Troop Command, Saint Louis, Missouri, 1995) Pg. 946-7

<sup>38</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 76

<sup>39</sup> Butler, Howard K. *The Restoration of the Army Air Corps: 1947-1953*. (United States Army Aviation and Troop Command, Saint Louis, Missouri, 1995) Pg. 150-7

<sup>40</sup> Bergerson, Frederic A. *The Army Gets an Air Force*. (Johns Hopkins University Press: Baltimore, MD, 1980) Pg. 53 and Butterworth, W. E. *Flying Army*. (Doubleday and Co., Garden City, NY, 1971) Pg. 88-9

the size of the combat zone, additional combat functions, exclusion of the Air Force from the combat zone, and control of helicopter development and procurement. On November 4, 1952 both services signed the Pace-Finletter agreement, establishing the freedom of the Army to use and develop rotary wing aircraft within an extended combat zone free of any Air Force supply assets. It also gave to the Army responsibility for development and procurement of helicopters free of any weight limits. The MOU did place restrictions on fixed wing aircraft, however, and the Air Force was still maintained as the supplier of CAS and air transport to the edge of the combat zone.<sup>42</sup>

The next battle between the services would come over the issue of the armed helicopter. The Air Force raised objections to the Army's development of CAS. It sought jurisdiction by inserting a clause reiterating Air Force control of all CAS, interdiction, and assault assets into every joint Air Force-Army agreement. At numerous times the Army attempted to calm fears by offering compromises. The Army proposed to drop the concept of organic CAS if the Air Force would supply planes specially built for this purpose. The Air Force repeatedly refused, claiming it knew the requirements for such aircraft better than the Army did.<sup>43</sup> Frustrations within the Army around this concept built and in 1958 General Willard G. Wyman, Commanding General of Continental Army Command, approved the armed helicopter concept, adding recognition to Col. Vanderpool's experiments.<sup>44</sup>

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<sup>41</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 77

<sup>42</sup> Butler, Howard K. *The Restoration of the Army Air Corps: 1947-1953*. (United States Army Aviation and Troop Command, Saint Louis, Missouri, 1995) Pg. 206-7

<sup>43</sup> Tolson, Lt. Gen. John J. *Airmobility 1961-1971*. (Department of the Army, Washington, DC, 1973) Pg. 13-14

<sup>44</sup> Stephenson, Roy Richard. *Road to Downfall; Lam Son 71/9 and U.S. Airmobility Doctrine*. (Ph.D. dissertation, University of Kansas, 1991) Pg. 16

Elements within the Army attempted to raise the question of CAS again in 1960 during the Rogers Board. This board had been convened to study the Army's aviation needs and decide which helicopter systems to procure in the future. Having been informed of Vanderpool's developments with the armed helicopter, board member Gen. Hamilton H. Howze attempted to insert a section on the need for armed helicopter units. The Board sympathized with Gen. Howze's request but placed the section in an addendum of the report instead for fear of further antagonizing the Air Force.<sup>45</sup>

Events seemed to contradict the Rogers Board's disapproval of the armed helicopter concept. In May of 1960 the Department of the Army approved a plan for the distribution of machinegun mounts to helicopter companies. Soon materials for other weapons systems followed. In August of 1960 a committee established by Gen. Wyman's replacement, ironically headed by Gen. Rogers, recommended that gunnery and weapons tactics be included in helicopter pilot training.<sup>46</sup> Whether the Air Force liked it or not the Army was working to build organic CAS.

In 1962 tensions between the Air Force and the Army flared when the findings of the Howze Board were presented. Convened by Secretary of Defense Robert McNamara this board sought to test the Army concepts of airmobility and air cavalry. The Board recommended the deployment of no fewer than five Air Assault Divisions that included hundreds of helicopters each, as well as a number of fixed wing aircraft for tactical air

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<sup>45</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg.104-5

<sup>46</sup> Ibid. Pg. 105

support. The board also recommended a number of other diverse units including anti-tank helicopters and aerial artillery.<sup>47</sup>

The Air Force reacted violently, claiming that the recommendations violated every past agreement signed between the two services. General LeMay, Chief of Staff of the Air Force, stated that the recommendations of the Howze Board would unnecessarily duplicate capabilities already existing in the Air Force.<sup>48</sup> Anger in the Air Force intensified with the recommendations concerning armed helicopters in the role of CAS. This was an Air Force mission, it claimed, and could not be usurped by the Army according to the Key West Agreement of 1947 and every document and agreement on the subject up to the time of the Howze Board. What upset the Air Force most was the use of fixed wing aircraft organic to Army units operating in the manner the Howze Board proposed. Not only did these aircraft violate past agreements, they were used in manner that challenged established Air Force roles.<sup>49</sup>

The disputes culminated in a series of tests run throughout 1963-4 comparing not only CAS capabilities, but those of lift and transport as well. These tests were known as Goldfire I, a joint test with the Air Force offering CAS, and Air Assault II, a unilateral Army test of airmobile doctrine. These tests served to prove two things. First the Air Force was seen as providing nothing new. It had merely streamlined existing operations to provide the Army with CAS and transport assets. Secondly, the evaluators came to the conclusion that the airmobility innovation offered better mobility, better readiness, and

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<sup>47</sup> Stockfisch, J. A. "The 1962 Howze Board and Army Combat Developments." (RAND, Santa Monica, CA, 1994) Pg. 22-3

<sup>48</sup> Futrell, Robert Frank. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force Volume I.* (Air University, Maxwell Air Force Base, AL, 1974) Pg. 411

<sup>49</sup> Ibid. Pg. 25

better integration of ground and air assets.<sup>50</sup> The Army solution also offered answers to problems of CAS, but the evaluators found that these assets could not stand up to prolonged exposure or an armored threat. Although useful in many ways the airmobility concept had its limitations.<sup>51</sup> As Gen. Harold K. Johnson, new Chief of Staff of the Army, stated upon viewing the tests back to back "...it was like comparing a gazelle to an elephant." The Army, he further stated, needed both.<sup>52</sup> When Secretary McNamara approved the formation of the 1<sup>st</sup> Cavalry Division (Airmobile) on June 15, 1965 the struggle with the Air Force was drawing to a close.

The competition subsided in 1966 with the signing of the Johnson-McConnel agreement that solidified the conclusions drawn from the Howze Board and subsequent exercises. The responsibility for tactical airlift and CAS was split between rotary wing and fixed wing assets. The Army was allowed to move troops with its own rotary wing units, while the Air Force would assist in resupply of these forces with fixed wing assets. Armed helicopters were also allowed to provide fire support for airmobile units. In the agreement the Air Force relinquished "all claims for helicopters and follow-on rotary-wing aircraft which are designed and operated for intratheater movement, fire support, supply and resupply of Army forces." It also lifted all restrictions on where and how these helicopters could operate, including CAS missions.<sup>53</sup> This provided the Army with an opportunity to develop a helicopter explicitly for the purpose of CAS without Air

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<sup>50</sup> Krepinevich, Andrew F. *The Army and Vietnam*. (Johns Hopkins University Press, Baltimore, Maryland, 1986.) Pg. 123-4

<sup>51</sup> Tolson, Lt. Gen. John J. *Airmobility 1961-1971*. (Department of the Army, Washington, DC, 1973) Pg. 56-8

<sup>52</sup> Raines, Edgar F. Jr., "The Army and Organic Tactical Air Transport, 1952-1965." (U.S. Army Center of Military History, Unpublished manuscript, 4 November 1997) Pg. 44

<sup>53</sup> Wolf, Richard I. *The United States Air Force: Basic Documents on Roles and Missions*. (Office of Air Force History, Washington, DC, 1987) Pg. 382-3

Force interference.<sup>54</sup> The agreement was not a complete victory for the Army, it had to abandon nearly all of its fixed wing assets and plans for their future use. In this manner the Air Force was able to maintain its role in intratheater transport. It would also continue to supply CAS from fixed wing aircraft, supplementing the support provided by Army helicopters.<sup>55</sup>

The presence of arguments over roles and missions between the Army and the Air Force lends support to the theory of interservice rivalry. The overlap concerning the use of aviation allowed the Army to innovate and create the doctrine of airmobility despite protests from the Air Force. The rivalry with the Air Force over the implementation of this innovation led to a series of tests of the concept that proved it to be a viable addition to military means. By seeking control of a disputed mission, the Army successfully innovated, adding aviation assets to its basic structure.

#### Implementation of the Airmobility Innovation: the Effects of Civilian Intervention

Civilian intervention too played its part in shaping the innovation of helicopter warfare. This intervention came at times vital to the process when many of the doctrinal concepts had been created, but funds for their implementation were lacking and the willingness to adopt new ideas low. Interservice rivalry with the Air Force also hampered the airmobility innovation, and the two services remained deadlocked about their roles and missions. To alleviate these problems civilian intervention was needed.

The first such intervention came in 1952 when the services were deadlocked over whether or not the Army would operate its own helicopters in the combat zone. This fight soon moved beyond the service secretaries to Secretary of Defense Robert A. Lovett.

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<sup>54</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 13

Members of the Army who supported the helicopter innovation went directly to the Secretary and notified him of the conflicting programs. Senior Army officials demanded that the Secretary of Defense move quickly to end the duplication.<sup>56</sup> On October 13, 1952 a meeting was held to discuss the conflict which included the Chief of Staff of the Army, his counterpart from the Air Force, both service secretaries, and the Deputy Secretary of Defense. The outcome of this meeting became formalized in the MOU of November 4, 1952, also known as the Pace-Findletter agreement. In the agreement Secretary Lovett deemed that all transport internal to the combat zone was an Army responsibility alone. The Air Force would not provide supply there, but would continue to do so outside of the combat zone.<sup>57</sup>

A second intervention came with the more sweeping changes of the Kennedy administration. Seeking a more versatile strategy than Eisenhower's massive retaliation, the Kennedy administration sought to rebuild conventional forces for a doctrine of "flexible response." This doctrine would allow the United States to fight conventional wars to contain Communism while also preparing for the ultimate conflict with the Soviet Union.<sup>58</sup> As part of this doctrine Secretary Robert McNamara wrote two memorandums to Army leadership in 1962 demanding a new look at tactical mobility on the battlefield.<sup>59</sup>

Disappointed with the sluggish pace of Army restructuring and well informed of experiments with air cavalry, McNamara demanded the convening of a committee to

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<sup>55</sup> Ibid. Pg. 382-3

<sup>56</sup> Butler, Howard K. *The Restoration of the Army Air Corps: 1947-1953*. (United States Army Aviation and Troop Command, Saint Louis, Missouri, 1995) Pg. 964-966

<sup>57</sup> Ibid. Pg. 206-7

<sup>58</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg.105-8

study problems in tactical mobility. As head of this board he chose General Hamilton H. Howze, who had long held a belief in the versatility of the helicopter in war. Also appointed were members of the helicopter industry, civilian research groups and think tanks, members of the Department of Defense, and ranking members of the Army.<sup>60</sup> In three months the board collected, tested, and evaluated a number of different formations for the use of helicopters in a variety of combat situations, and ultimately convinced McNamara and military leaders of their utility.<sup>61</sup> The Defense Department authorized the development of the 11<sup>th</sup> Air Assault Division (Test) and the 10<sup>th</sup> Air Transport Brigade to further refine these ideas.

Though these units were significantly smaller than what the Howze board had envisioned and did not include many of its ideas, it did help to open the funding spigot. Helicopter procurement before 1962 and the Howze Board had been a slow process with small numbers of new helicopters being deployed each year. After the Howze Board these numbers began to climb steadily and by 1965, when many of the tests carried out by the 11<sup>th</sup> Air Assault Division had been completed, the numbers grew. By 1970 the total number of Army rotary winged aircraft was over three and a half times that of 1962.<sup>62</sup>

The Howze Board also helped put more funds into research and development for helicopter tactics. As one officer stated:

For the first time in the history of the Army, a bunch of people had been turned loose with a high priority on personnel and equipment, and told

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<sup>59</sup> Stockfisch, J. A. "The 1962 Howze Board and Army Combat Developments." (RAND, Santa Monica, CA, 1994) Pg. 39-42

<sup>60</sup> Stephenson, Roy Richard. *Road to Downfall; Lam Son 71/9 and U.S. Airmobility Doctrine*. (Ph.D. dissertation, University of Kansas, 1991) Pg. 31-2

<sup>61</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 8-10

<sup>62</sup> I am indebted to Lt. Gen. (Ret.) Robert R. Williams at Fort Rucker for this information.

O.K., here's the dough, we'll get the people and equipment; [you] come up with the concept and prove it.

Hundreds of officers and thousands of enlisted men with tons of equipment were dedicated to the process. Helicopter manufacturers were forced to increase production to meet demand. The test units flew all over the country participating in live fire exercises and mock battles. For these tests, unlike Col. Vanderpool's experiments, the government willingly paid the bills.<sup>63</sup> Troop strength in the Army also increased because of the Howze Board. McNamara approved an increase of 15,000 men to supply the Army with pilots and technicians for its new helicopters.<sup>64</sup>

McNamara's support also helped the Army to overcome the protests of the Air Force in developing armed helicopters for tactical air support. By creating the 11<sup>th</sup> Air Assault Test Division the Department of Defense approved the use of the armed helicopter and air cavalry for modern warfare. The Air Force was forced to concede, and many felt that the formation of Air Assault Divisions on a permanent basis was a forgone conclusion.<sup>65</sup> Beyond Secretary McNamara the Army even had the support of the President. President Kennedy is said to have praised the Army's "helicopter gunships" and demanded their deployment in greater numbers.<sup>66</sup>

The Howze Board and McNamara's support for airmobility also helped the innovation overcome critics within the Army itself. While the idea of the helicopter in Army doctrine had received wide support, differences arose over how the helicopters should be organized. Airmobility advocates supported the idea of entire divisions being

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<sup>63</sup> Stockfisch, J. A. "The 1962 Howze Board and Army Combat Developments." (RAND, Santa Monica, CA, 1994) Pg. 39-42

<sup>64</sup> Ibid. Pg. 26

<sup>65</sup> Butterworth, W. E. *Flying Army*. (Doubleday and Co., Garden City, NY, 1971) Pg. 96-7

moved about by helicopters, while others believed they should be dispersed throughout the Army to increase quality in all units. Due to this intraservice rivalry the full implementation of airmobility was delayed. Only with the convening of the Howze Board and McNamara's approval of the 11<sup>th</sup> Air Assault Test Division was the controversy settled. Even then, the full implications of the airmobility concept were not realized. Rather than five divisions of airmobile troops, only two airmobile divisions were ever organized. The same paring down of numbers was true for the implementation of cargo helicopter units and regiments of aerial artillery. Some helicopter units conceived by the Howze Board, such as the anti-tank helicopter units, were not implemented until much later.<sup>67</sup> Nonetheless civilian intervention was able to overcome intraservice concerns and airmobility units were established.

These events speak to the importance of civilian intervention in the airmobile innovation, but in a way that differs slightly from the theory posited above. The idea for the helicopter innovation was well under way by the time civilian intervention was needed. When the Army moved to implement the innovation, assistance was needed to overcome the intransigence of the Air Force and problems with the budget. By moving the fight for Army helicopters to a higher level, Army proponents of rotary wing aviation were able to trigger civilian intervention from the Department of Defense that helped them bypass these problems. Both Secretaries Lovett and McNamara had been well informed of Army progress on helicopter aviation by members of the Army. When these developments supported the administration's view of military doctrine, civilians

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<sup>66</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg.105-8

<sup>67</sup> Krepinevich, Andrew F. *The Army and Vietnam*. (Johns Hopkins University Press, Baltimore, Maryland, 1986.) Pg. 120-1

intervened to promote the implementation of innovation. Civilian intervention may not have been key in developing the idea for airmobility, but it was definitely a major factor in its implementation.

### The Airmobility Innovation in Vietnam

The airmobility innovation found a place in Army strategy by answering the strategic problems of the nuclear battlefield. By 1962 doctrine for the use of such units existed and training had been carried out. Though the tests of the Howze Board and the later Air Assault tests had been concerned with a mid to high intensity battlefield in Europe, events in the early 1960's led to a different début of the airmobile concept. The Kennedy administration had begun to send American troops to South Vietnam to guard against the incursions of the Communists from the north. Airmobility doctrine would be used not against nuclear capable Soviet forces in Europe, but against lightly armed guerilla forces in Southeast Asia.

The Army felt confident that its new doctrine was the answer to problems facing the American Military Assistance Command Vietnam (MACV) and Republic of Vietnam Armed Forces (RVNAF) units in combating guerrilla warfare. The counterinsurgency battle was seen as an area war, much like the possible nuclear scenario in Europe was to be.<sup>68</sup> MACV and RVNAF forces would use airmobility to first find the enemy units, then fix them in place and assemble troops by helicopter to destroy them. The mobility and increase in firepower enabled by helicopters became the perfect technological solution to the guerrilla tactics of the enemy.<sup>69</sup> Though this necessitated some significant changes in the way the airmobility units operated, Army and civilian leaders felt the helicopter units

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<sup>68</sup> Ibid. Pg. 114

<sup>69</sup> Ibid. Pg. 109

were the best for the job.<sup>70</sup> The newly formed 1<sup>st</sup> Cavalry Division (Airmobile) was the first true airmobile unit sent to Vietnam. Indeed its deployment orders on July 1, 1965 followed its creation nearly simultaneously. By August 27 an advanced element of the division was already “in country” and units in the United States were being stripped of aviators to fully man the division.<sup>71</sup>

Some helicopter units had already been deployed to Vietnam at the time of the Howze Board tests. These units had been operating as troop carrying helicopters and their experiences helped shape how airmobility doctrine worked in Vietnam. This was especially true of how the helicopters approached a landing zone<sup>72</sup>, and tactics for armed helicopters.<sup>73</sup> Though the numbers of available helicopter units, aircraft, and pilots were extremely low at the start of the Vietnam War, they quickly increased after the introduction of the 1<sup>st</sup> Cavalry Division. The end of 1965 saw over fifty aviation companies and airmobile units deployed to Vietnam. By 1966 they had been joined by twenty-two more.<sup>74</sup> Helicopters had become the solution for the Army, and during the Vietnam War they had the numbers to prove it.

Utility helicopters and their armed escorts were the single most important means of fighting in Vietnam. This served to increase the size of Army aviation in general, and helicopters in particular. By the end of the 1960’s 9,528 helicopters were in the Army inventory compared to 2,489 at the end of the 1950’s. 24,000 pilots and thousands more

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<sup>70</sup> Stephenson, Roy Richard. *Road to Downfall; Lam Son 71/9 and U.S. Airmobility Doctrine*. (Ph.D. dissertation, University of Kansas, 1991) Pg. 42-3

<sup>71</sup> Dunstan, Simon. *Vietnam Choppers: Helicopters in Battle 1950-1975*. (Osprey Publishing Ltd, London, England, 1988) Pg. 34

<sup>72</sup> Stephenson, Roy Richard. *Road to Downfall; Lam Son 71/9 and U.S. Airmobility Doctrine*. (Ph.D. dissertation, University of Kansas, 1991) Pg. 37

<sup>73</sup> Ibid. Pg. 22-3

<sup>74</sup> Stanton, Shelby L. *The Rise and Fall of an American Army: U.S. Ground Forces in Vietnam, 1965-1973*. (Presidio Press, Novato, CA, 1985) Pg. 89

support personnel flew and maintained the new machines, more pilots than existed at the time in the United States Air Force. The helicopter had come of age.<sup>75</sup>

### **The Anti-Tank Helicopter Innovation**

#### **Political and Military Situation After Vietnam**

Innovation centered on the helicopter did not end with the war in Vietnam; indeed Vietnam almost destroyed the innovation it had helped create. In the aftermath of America's police action many in the Army sought to forget the ways in which the war had been fought, especially the airmobility concept. Questions were being raised about the helicopters versatility, vulnerability, and place in future operations.

Events in Europe strengthened these arguments with Soviet deployment of a number of new anti-aircraft systems. Radar guided weapons like the ZSU-23-4 23mm anti-aircraft gun blanketed Soviet territory, reinforced by the SA-9 Gaskin and the man portable SA-7 Grail surface to air missile systems. Even Soviet tanks had been equipped with heavy machineguns designed for an anti-aircraft role. The presence of a sophisticated command and control network to link these systems further improved their lethality.<sup>76</sup> These factors made mass flights of troop carrying helicopters a suicide mission.

The threat to Army aviation expended beyond these mere technical difficulties with the adoption of a new war fighting doctrine within the Army. Disappointment and disillusion with the Army's actions in Vietnam led the Army to focus away from small-scale brush fire wars and towards the coming battle with the Soviet Union in Europe. During the 1960's and 1970's the Soviet Union had increased its defense spending and

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<sup>75</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg.12-13

developed many new types of weapons to combat NATO forces in Europe. These new weapon types ranged from improved air defenses, to new types of tanks and aircraft. By 1965 the Soviet Union had added five divisions of tanks to the forces stationed in Eastern Europe, and its military production had outpaced that of the United States.<sup>77</sup>

The Army also perceived the need for change in force structure and tactics when it reviewed the events of the 1973 war between Israel and its Arab neighbors. The two adversaries in this war mirrored the situation of United States and the Soviet Union. Israel was supplied with weapons similar to those in use in NATO, and had built their military doctrine with the help of the United States and other allies. The Arab forces had been armed with Soviet technology and trained in Soviet doctrine and tactics. The war that erupted in October of 1973 was one of the most intense seen since World War II. Israeli forces nearly collapsed under the intensity of the Arab attack despite the overwhelming confidence most U.S. military officers had in their abilities. The war was a wake up call for military officers in the U.S. Army that led to a call for change in Army doctrine.<sup>78</sup>

The events of Vietnam also lead to a change in civilian thinking on national security. With the Nixon administration security policy changed from flexible response and combating of Communism in all parts of the world, to a policy of détente and draw down of American military forces. The draft system was abolished and the military was changed to an all volunteer force. This severely limited the number of troops the Army could call up in time of war. Détente also emphasized political solutions to problems with

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<sup>76</sup> Ibid. Pg. 125

<sup>77</sup> Dunnigan, James F. and Raymond M. Macedonia. *Getting It Right: American Military Reforms After the Vietnam to the Persian Gulf and Beyond*. (William Morrow and Company, Inc., New York, NY, 1993) Pg. 108-9

Communist insurgencies. Instead of sending troops to fight in the world's brush fire wars military and financial aid was sent to embattled nations.<sup>79</sup> In the aftermath of Vietnam many in government felt that the United States should steer clear of direct military involvement in developing countries and instead support our established allies and interests in Europe.<sup>80</sup>

The Army was not stripped of all military missions, however. In order to maintain credibility of military threat, civilian leaders approved increases of troop strength in Western Europe. Nixon's foreign policy emphasized standing fast in Europe in the face of Communist strength.<sup>81</sup> The Army was to concern itself not with small-scale wars, but the anticipated high intensity fight in Europe.<sup>82</sup> The front in Central Europe was perceived not only as the Army's most important mission, but also its most challenging. It was the change in national security policy during this era that truly shaped future Army doctrine. The selection of the types of technology and doctrine used depended on civilian decisions on where the next war was to be fought. Doctrinal change developed not only due to changes in the technology and balance of power, but because of objections to Army policies brought by their civilian leaders.<sup>83</sup>

These events lend support to the theories of strategic threat and civilian intervention. As Army leaders perceived the need for change stemming from the Soviet

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<sup>78</sup> Ibid. Pg. 115-6

<sup>79</sup> Diamond, Robert A. (Ed.) *Nixon: the Third Year of His Presidency*. (Congressional Quarterly, Washington, DC, 1972) Pg. 47A

<sup>80</sup> Ibid. Pg. 114 and Romjue, John L. *From Active Defense to AirLand Battle: the Development of Army Doctrine 1973-1982*. (United States Army Training and Doctrine Command, Fort Monroe, VA, 1984) Pg. 2

<sup>81</sup> Joiner, Henry M. *American Foreign Policy: The Kissinger Era*. (The Strode Publishers, Inc., Huntsville, AL, 1977) Pg. 235

<sup>82</sup> Diamond, Robert A. (Ed.) *Nixon: the Third Year of His Presidency*. (Congressional Quarterly, Washington, DC, 1972) Pg. 47A

<sup>83</sup> Doughty, Maj. Robert A. *The Evolution of US Army Doctrine, 1946-76* (Combat Studies Institute, Fort Leavenworth, KS, 1979) Pg. 47

buildup in Europe and the lessons of the 1973 Arab Israeli War, a number of them moved to give new focus to Army doctrine. General William DePuy of the recently formed United States Army Training and Doctrine Command (TRADOC) headed up these efforts, resulting in the adoption of the doctrine of “active defense.” These changes in doctrine were affected by civilian insistence through Congress and the President on less intervention in developing countries. By propagating the strategy of détente and reducing the Army’s manpower, civilians forced the Army to concentrate on the Soviet threat to Europe. Through the limitation of roles civilian intervention directed the course of Army strategy.

#### Development of the Anti-Tank Helicopter

With the new focus of the Army away from brushfire wars and towards heavy armor clashes in the plains of Europe, the helicopter had to adjust to survive. In order to prove their worth in the Army’s new structure, helicopter advocates changed their focus from troop carrying mobility to weapons mobility. The helicopter, they claimed, was the perfect tank killer and could operate in a high intensity battlefield. This claim rested heavily on new developments in anti-tank guided missiles.<sup>84</sup>

In the late 60’s and early 70’s development of the Tube-Launched, Optically Tracked, Wire Guided (TOW) Anti-Tank Guided Missile (ATGM) had been steadily moving forward. In 1971 the Army began testing the feasibility of firing this system from helicopter gunships. During North Vietnam’s 1972 Easter offensive into the south, UH-1B’s armed with the system had accounted for twenty-seven tanks and sixty-one other

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<sup>84</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 22-3

targets in eight months without the loss of a single helicopter.<sup>85</sup> The Arab-Israeli War of 1973 had further proven the destructive capability and cost effectiveness of ATGM systems in a mid to high intensity battlefield.<sup>86</sup> By marrying the twin systems of the TOW ATGM and the AH-1 Huey Cobra helicopter gunship, aviation advocates felt they could create a viable place in the Army's new force structure.<sup>87</sup>

While anti-tank helicopters had long been debated in the Army, many of the ideas for its deployment had to be renewed and revamped. The anti-aircraft capabilities of the Soviets would not allow the use of Vietnam era gunship tactics; new tactics were created to minimize exposure. The foremost of these tactics was the development "nap of the earth" flying (NOE) that allowed helicopters to use their inherent abilities to weave between obstacles and fly below radar. As night vision systems were introduced, helicopters could further improve their stealth and survivability by operating at night.<sup>88</sup> While these ideas had been developed and practiced previously in the U.S. military, many Army aviators had to be trained in their use.<sup>89</sup>

With the use of TOW systems on highly mobile platforms and the use of NOE, Army aviators hoped to convince others that the helicopter had a place in Central Europe. It was stated that armored divisions facing Soviet tanks on the Central Front could be quickly reinforced or supplemented by helicopter gunships. Lightning strikes to open holes in the Soviet line, or plug holes along Allied positions, could be carried out and

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<sup>85</sup> Dunstan, Simon. *Vietnam Choppers: Helicopters in Battle 1950-1975*. (Osprey Publishing Ltd, London, England, 1988) Pg. 105

<sup>86</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 16

<sup>87</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 127-8

<sup>88</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 20-1

guard against fears of a blitzkrieg attack. In their willingness to discard old ideas and move towards new ones that would benefit the whole of the Army, aviators sought to preserve their place in the force structure. Army aviation's senior officers told their troops to "forget last year's war stories... find new ways that Army aviation can contribute to the Army's mission [and] get out and sell Army aviation."<sup>90</sup>

To forward this salesmanship of Army aviation a series of trials to prove the feasibility of anti-armor attack helicopters was carried out. In June of 1972 the Allied militaries conducted the Joint Helicopter Instrumented Evaluation, later known as the Ansbach Trials.<sup>91</sup> Held in Europe this exercise combined units of scout and attack helicopters defending against armored units reinforced by air defense weapons and fighter coverage. Using NOE, pop-up firing tactics, and wire guided missiles helicopters were able to establish an average exchange ratio of twelve to seventeen armored fighting vehicles destroyed for each helicopter killed. In some instances the ratios were as high as 33:1 in favor of the helicopters. Since Allied forces on the Central Front were hypothesized as operating at a numerical disadvantage, a cost effective tank killer like the TOW armed attack helicopter was highly attractive.<sup>92</sup>

With the place of the helicopter once again secured within the Army, doctrine for these attack helicopters was more fully developed. With the introduction of the active defense doctrine the role of the helicopter shifted from use as a troop carrier, to suppression of enemy air defenses (SEAD) and destruction of enemy armor units. This

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<sup>89</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 125

<sup>90</sup> Allen, Matthew. *Military Helicopter Doctrines of the Major Powers, 1945-1992*. (Greenwood Press, Westport, CT, 1993) Pg. 17

<sup>91</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 126-7

<sup>92</sup> *Ibid.* Pg. 24-5

doctrine emphasized utilization of the extended capabilities of newly developed weapons systems to blunt the attack of Soviet armor.<sup>93</sup> It also emphasized the need for concentration of forces at critical moments, and use of terrain and concealment to increase the effectiveness of the weapons.<sup>94</sup> This emphasis had special importance for attack helicopters. Utilizing TOW missiles, NOE, and the inherent mobility of rotary wing aircraft, the helicopter was perfect for the doctrine of active defense. As shown in the Ansbach trails the system was also highly lethal and had good survivability.

Airmobility also gained new life in the doctrine of active defense. The 1976 manual on doctrine and tactics, which established active defense, stated in bold type, “The airmobile doctrine is the most dramatic organizational advance in the US Army.” The key to success in active defense was in concentrating combat power rapidly. By providing the needed assets of mobility and firepower the helicopter was able to cement a place for itself in the new Army doctrine.<sup>95</sup>

Evolving with changes in Army doctrine, the use of the attack helicopter took increasingly more aggressive forms. As active defense was phased out of Army doctrine as too passive, a new strategy formed. This doctrine formed out of ideas developed in TRADOC in the late 1970’s emphasizing the need to attack Soviet second echelon forces. While some troops would be responsible for meeting and holding the initial onslaught of Soviet forces, others would maneuver to interdict the second echelon divisions before they could be committed to battle. This doctrine, known as Central Battle, had a place for

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<sup>93</sup> Doughty, Maj. Robert A. *The Evolution of US Army Doctrine, 1946-76* (Combat Studies Institute, Fort Leavenworth, KS, 1979) Pg. 44

<sup>94</sup> Romjue, John L. *From Active Defense to AirLand Battle: the Development of Army Doctrine 1973-1982*. (United States Army Training and Doctrine Command, Fort Monroe, VA, 1984) Pg. 8

<sup>95</sup> Doughty, Maj. Robert A. *The Evolution of US Army Doctrine, 1946-76* (Combat Studies Institute, Fort Leavenworth, KS, 1979) Pg. 43

the attack helicopter as well. The firepower and mobility inherent in these systems was seen as vital to providing support not only for concentrating fire in the initial holding attack, but also for interdiction against the second echelons.<sup>96</sup>

By 1981 the ideas first developed in the Central Battle doctrine had been greatly expanded and included better coordination of attacks and deeper interdiction of Soviet forces. The concept of AirLand Battle stated that deep attack to relieve pressure on front line forces was not a luxury, but a necessity. By disrupting second echelon forces the Soviets would not be able to bring their greater numbers to bear on NATO troops. The key to deep attack was maneuverability and firepower, forces would have to move rapidly and strike hard using the terrain to their advantage.<sup>97</sup>

The attack helicopter was again seen as vital in this environment. Near the top of the Army's procurement list was the AH-64 Apache, a highly maneuverable anti-tank helicopter that embodied all the key elements of Army doctrine.<sup>98</sup> Airmobility too was seen as an important element of the AirLand Battle. The airmobile units, together with attack aircraft, would assist in extending the battlefield and disrupting Soviet forces.<sup>99</sup> By the 1990's the importance of attack helicopters was well set. Army commanders believed that long-range fires from attack helicopters would prove decisive to gaining the initiative in battle. Aviation assets could be committed "en masse" to deep strike operations making air power particularly decisive.<sup>100</sup> Army aviation was once again an important part of the Army's plans for battle.

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<sup>96</sup> Romjue, John L. *From Active Defense to AirLand Battle: the Development of Army Doctrine 1973-1982*. (United States Army Training and Doctrine Command, Fort Monroe, VA, 1984) Pg. 26

<sup>97</sup> Ibid, Pg. 44-50

<sup>98</sup> Ibid. Pg. 47

<sup>99</sup> Ibid. Pg. 67

<sup>100</sup> Hamilton, Major Robert J. "Green and Blue in the Wild Blue." (Thesis for Air University, Maxwell Air Force Base, AL, 1993) Pg. xvi

## Army-Air Force Rivalry and Agreement

During the development of the anti-tank helicopter and AirLand Battle doctrine, leaders in the Army and the Air Force became involved in renewed roles and missions disputes. The dispute centered on the deployment of the attack helicopter as an aircraft for CAS. Despite the Johnson-McConnell agreement, Air Force leaders became increasingly concerned that the Army's proposed Advanced Aerial Fire Support System (AAFSS) would encroach on the Air Force's mission of CAS.<sup>101</sup> Instead the Air Force advocated the development of a new fixed wing CAS aircraft through the A-X program.

Funding battles raged through the halls of Congress and the Pentagon over the AAFSS and A-X programs as the roles and missions disagreement flared. The debate continued through Congressional subcommittees and military investigative boards even after the AAFSS had been deemed too expensive and a search for a less complex Advanced Attack Helicopter (AAH) had begun.<sup>102</sup> By 1975 the A-X program had culminated in the purchase of the Fairchild A-10<sup>103</sup>, and the Army's AAH program was well into the development phase.<sup>104</sup> To justify the purchase of both systems, a joint agreement between the Army and Air Force was signed which finally ended the controversy over CAS.

Signed by both services on September 16, 1975 the agreement stated quite simply that no duplication in missions between the two aircraft existed. The attack helicopter was seen not as CAS, but as an extension of the Army's organic firepower. It would work

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<sup>101</sup> Futrell, Robert Frank. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force Volume II*. (Air University, Maxwell Air Force Base, AL, 1974) Pg. 518-9

<sup>102</sup> Ibid. Pg. 519-30

<sup>103</sup> Ibid. Pg. 528

<sup>104</sup> Bradin, James W. *From Hot Air to Hellfire: The History of Army Attack Aviation*. (Presidio Press, Novato, CA, 1994) Pg. 145

along and behind the forward edge of the battle area to counter enemy armor, essentially as envisioned by active defense. The AAH then was not a duplication of the A-10, but a compliment to it. Both the Army and the Air Force stated that the limited range, speed, and firepower of the AAH, as compared to fixed wing aircraft, made it a poor candidate for CAS.<sup>105</sup> The A-10, however, clearly filled a CAS role as defined by the military establishment.<sup>106</sup> By defining away the problems with CAS, the Army and the Air Force both preserved a role in fire support.

By 1984 the expansion of the helicopter's role in warfare and other issues inherent in AirLand Battle had created the need for another joint Army-Air Force agreement. In contrast with other agreements, this document covered a wide range of topics necessary for AirLand Battle. Called the 31 Initiatives and signed on May 22, 1984 the document had special impact on attack helicopter operations in interdiction. In keeping with the theme of complimentary missions both services agreed to coordinate all interdiction efforts, suppression of enemy air defenses, and intra-theater lift. The document went on to state that all tactics and procedures for these missions would be developed jointly, with equal input from both sides.<sup>107</sup> Whatever the eventual outcome of these incentives it's signing signifies the easing of tensions between the Army and the Air Force. The two services had abandoned interservice rivalry and embraced jointness in order to expand and protect their roles and missions.

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<sup>105</sup> Wolf, Richard I. *The United States Air Force: Basic Documents on Roles and Missions*. (Office of Air Force History, Washington, DC, 1987) Pg.401-5

<sup>106</sup> Futrell, Robert Frank. *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force Volume II*. (Air University, Maxwell Air Force Base, AL, 1974) Pg. 530

<sup>107</sup> Wolf, Richard I. *The United States Air Force: Basic Documents on Roles and Missions*. (Office of Air Force History, Washington, DC, 1987) Pg. 413-423

This second wave of innovation in Army aviation supplies us with another case for the testing of theory. In this case it appears that strategic considerations and a threat to the organization again provide the impetus for innovation. In order to maintain the viability of the organization in future wars new concepts and ideas had to be established. By developing the doctrine of attack helicopters for anti-armor operations, the Army was able to provide solutions to the problems facing it in Europe. In this case civilian intervention is closely linked with this change since the focus on European operations was mandated as the main focus of Army operations. Such a strong statement from civilian leaders virtually dictated the need for innovation in this era. Rather than coming up with new solutions on their own, it could be argued that Army leaders innovated due to civilian commands. Interservice rivalry played a role initially in this innovation but then ceased to be a factor. Indeed, the theory is followed to perfection with the development of the AAH and the A-X. The Army sought fire support for its troops and innovated to create the AH-64. The Air Force perceived a threat to its mission and developed the A-10 to counter Army intransigence into CAS. By ending the rivalry and redefining the roles and missions, both services were able to retain a mission that enabled expansion of capabilities and reduction of uncertainty.

### **Conclusions**

In the case of airmobility, factors exist for the validation of all the theories presented, but only civilian intervention offers the best explanation for the implementation of airmobility. In the developmental stage of the airmobility innovation strategic threat and interservice rivalry played a great role. The threat of strategic nuclear weapons and the lessons in mobility from the Korean War served to initiate thinking on

airmobility, as strategic threat theory would predict. Due in part to fears of defeat in a nuclear war, Army officers began experimenting with the helicopter. Gen. Gavin and others formed doctrine vital to airmobile units and sought to field these units in the Pentomic division of the 1950's. As the strategic mission of the United States changed to one of confrontation in South East Asia, aviation advocates were able to promote airmobility as a means to fight the counterinsurgency battle. Despite a broad base of support for the innovation in Army command, airmobility was not implemented on the scale envisioned by its creators until 1962 with the forming of the 11<sup>th</sup> Air Assault Test Division. Airmobility was implemented not by a self-sustained core of Army helicopter advocates, but by the direct order of the Secretary of Defense.

By exploiting language in the 1948 roles and missions agreement Army officers were able to justify experimentation with helicopters as a means of improving their mobility and firepower and thereby securing assets not forthcoming from the Air Force. When the Air Force objected to the use of organic Army aircraft, an interservice rivalry debate ensued exactly as interservice rivalry theory would predict. Though these agreements did secure the place of helicopters in Army force structure, debate over their roles and missions continued. The Air Force refused to relinquish the missions of intratheater transport and CAS even when the superiority of the helicopter for some of these missions was demonstrated. The two services were unable to fully agree on the implementation of airmobility and civilian intervention was needed to end the debate.

In the case of airmobility only civilian intervention offers adequate explanation for the implementation of the innovation. Without the intervention of Secretary McNamara airmobility would not have been implemented in Army force structure. By

convening the Howze Board and recommending the establishment of the 11<sup>th</sup> Air Assault Test Division, McNamara directly brought about the establishment of airmobility over the objections of the Air Force and Army officers opposed to the innovation. Further support for the implementation of airmobility occurred with the civilian mandated strategy of flexible response. Focusing away from immediate use of nuclear weapons and establishing a policy of confronting the Communist threat in South East Asia gave funds and manpower to Army projects that promised successful warfare. In no case was this increase of funds and troops more apparent than with airmobility. While strategic threat and interservice rivalry offer sufficient explanations of the development of airmobility, only civilian intervention can explain its implementation.

The anti-tank helicopter gives another case for the testing of innovation theories. The failure of the United States armed forces in Vietnam began another process of change within Army doctrine. As strategic threat theory predicts the anti-tank innovation began as a way of countering increased Soviet strength, and as a response to the problems of increased firepower and lethality on the modern battlefield. In seeking solutions to these problems Army officers had to rethink strategy once again. This was made possible by shifting the focus of rotary wing assets from troop mobility to weapons mobility. As the strategy of active defense matured, Army aviators secured key missions in supporting Army forces and destroying Soviet tanks.

The anti-tank helicopter was developed not only in response to increased Soviet armored forces, but also in response to civilian mandated missions and goals. The Nixon administration rejected the strategy of flexible response and turned to a strategy of détente. This strategy had indirect impact on Army doctrine. The Army's sole mission

under this strategy was to concentrate on defeating the massive Soviet armored forces in Central Europe. While strategic problems did mandate some innovation in Army doctrine, it is difficult to say whether the innovation would have resulted in the anti-tank helicopter if the Nixon doctrine were not in place. By intervening, civilians focused the innovation in Army doctrine on problems of armored warfare in Central Europe and had an indirect influence in its development. By offering a solution to the problems posed by civilian leaders Army aviation was able to implement its innovation.

Interservice rivalry acted early in the process of the anti-tank innovation but then subsided due to agreements between the Army and Air Force. These agreements served to focus Army aviation on developing rotary wing assets rather than fixed wing options. While this served to focus the development of the anti-tank helicopter, interservice rivalry had little impact on how these assets would be implemented into Army force structure.

In the case of the anti-tank helicopter, civilian intervention seems to have slightly greater influence. While intertwined with strategic threat it is doubtful that without the indirect influence of the Nixon doctrine the Army aviation community would have chosen to focus on the anti-tank helicopter. When civilians mandated that the Army focus on the mission of destroying Soviet armored forces in Europe, Army officers were forced to find solutions on one problem only. Though the influence is indirect, civilian intervention seems the best explanation for the anti-tank helicopter innovation. Taken as a whole, civilian intervention seems the best explanation for Army aviation innovations.

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